



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q63724

Tsuyoshi KITAHARA

Appln. No.: 09/816,770

Group Art Unit: 2853 ✓

Confirmation No.: 4825

Examiner: Lam S. Nguyen

Filed: March 26, 2001

For: LIQUID JETTING METHOD AND LIQUID JETTING APPARATUS USING THE METHOD

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INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. §§ 1.97 and 1.98

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and/or listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

One copy of each of the listed documents is submitted herewith.

The present Information Disclosure Statement is being filed: (1) No later than three months from the application's filing date; (2) Before the mailing date of the first Office Action on the merits (whichever is later); or (3) Before the mailing date of the first Office Action after filing a request for continued examination (RCE) under §1.114, and therefore, no Statement under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

In compliance with the concise explanation requirement under 37 C.F.R. § 1.98(a)(3) for foreign language documents, Applicant submits the following explanations: Applicants are enclosing herewith a copy of a Japanese Office Action issued on October 1, 2003 with respect to

INFORMATION DISCLOSURE STATEMENT

U.S. Appln. No.: 09/816,770

one of the priority applications of the above-mentioned application. The Japanese Office Action contains the following explanation:

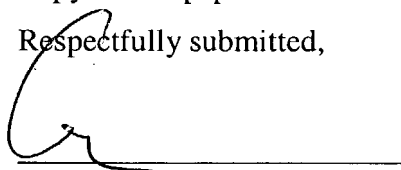
D1: JP-A-11-58704 - As to claim 1 of the present invention, the Examiner asserts that D1 teaches an ink jet recording device which creates a correction table for correcting a difference of ink jetting amounts between nozzles, and stores the correction table into a memory. The correction table is created by using nozzles and drive voltage waves as a parameter. The Examiner points out a relevant passage, column 7, line 37 through page 8, line 27 and Fig. 5. (See APPENDIX 1). Also attached is an Abstract of JP11058704.

D2: JP-A-11-277744 - As to claims 2 to 7, the Examiner asserts that D2 teaches a method of driving an ink jet recording head in which a plurality of signals are applied to an piezoelectric transducer in one printing period so that ink jetting amount is varied. The Examiner points out a relevant passage column 1, line 2 to 11 and Fig. 5 (see APPENDIX 2). The Examiner asserts that both of D1 and D2 belong to a technical field regarding an ink jet recording device. Also attached is an Abstract of JP11277744.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,


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WASHINGTON OFFICE

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Date: January 2, 2004

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(use as many sheets as necessary)

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Application Number	09/816,770
Confirmation Number	4825
Filing Date	March 26, 2001
First Named Inventor	Tsuyoshi KITAHARA
Art Unit	2853
Examiner Name	Lam S. Nguyen
Attorney Docket Number	O63724

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Examiner Signature

Date Considered

¹Applicant's unique citation designation number (optional). ²See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or in the comment box of this document. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to indicate here if English language Translation is attached.

TP

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拒絶理由通知書



特許出願の番号 特願2000-083790
起案日 平成15年 9月22日
特許庁審査官 桐畑 幸▲廣▼ 9606 2P00
特許出願人代理人 西川 慶治 (外 1名) 様
適用条文 第29条第2項

この出願は、次の理由によって拒絶をすべきものである。これについて意見があれば、この通知書の発送の日から60日以内に意見書を提出して下さい。

Foot64/

USPO 1/10/01

理 由

本願の下記の請求項に係る発明は、下記引用例に記載された発明に基づいて、当業者が容易に発明をすることができたものであるから、特許法第29条第2項の規定により特許を受けることができない。

記

- ・請求項 1～7
- ・引用例 1. 特開平11-58704号公報
2. 特開平11-277744号公報
- ・備考

1. 請求項1に係る発明について

上記引用例1には、ノズル間に生じるインク吐出量のバラツキを補正するために、ノズルと駆動電圧波形をパラメータとした補正テーブルを作成し、メモリなどに記憶するインクジェット記録装置が記載されている（第7欄第37行～第8欄第27行及び図5参照）。

2. 請求項2～7に係る発明について

請求項1を引用する部分については上記のとおり。

また、上記引用例2には、インクジェット式記録ヘッドの駆動方法において、1印刷周期内に複数の信号を圧電振動子に印加することにより、インク吐出量を変化させる技術が記載されており（第1欄第2行～第11行及び図5参照）、引用例1及び引用例2に記載された発明は、インクジェット記録装置という共通の技術分野に属するものである。

よって、引用例1に記載された発明に引用例2に記載された上記技術を適用して、本願の請求項2～7に係る発明のように構成することは、当業者が容易に想到し得ることであり、また、その効果も当業者が予測し得る程度のものである。

この拒絶理由通知の内容に関するお問い合わせ、または面接のご希望がございましたら下記までご連絡下さい。

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先行技術文献調査結果の記録

・調査した分野 I P C 第 7 版 B 4 1 J 2 / 0 4 5

この先行技術文献調査結果の記録は、拒絶理由を構成するものではない。

APPENDIX 1 (JP-A-11-58704)

The ink jet recording device shown in Fig. 5 includes correction means which corrects the variation in the ink jetting amounts between nozzles caused by passage of time and change of external environment and so on. The correction means corrects the variation by selectively applying a plurality of different waveforms to ink jetting means of the ink jetting head having a plurality of nozzles so that the gradation expression is performed.

The variation correction procedure of the ink jetting amount in the equipment of Fig. 3 is same as that of the first embodiment. First, an ink jetting amount ejected from each nozzle by applying M kinds of different drive voltage waves to each ink jetting means is measured. Next, the error of the ink jetting amount in each nozzle is calculated between a reference value of the ink jetting amount which is set for M kinds of every different drive voltage waves and the measured value. A variation correction data of C bit is created for every drive voltage wave and every nozzle. At this time, the correction data is created based on a translation table of the error / correction data of the ink jetting amount which has a relation between the drive voltages and ink jetting amounts for every drive voltage waveform.

The correction table using the nozzle and drive voltage waveform as parameter is created based on the correction data. The correction table is stored in memory etc. After determining drive voltage wave selection data based on an image data to record, the variation correction data corresponding to each ink jetting means and each drive voltage waveform are read from the correction table, and are sent to a shift register 15. The variation correction data 19 is input to the shift register 15 while synchronizing with the clock signal 20, and they are output sequentially from an output terminal 16-1, 16-2, ..., 16-N of the shift register 15. The variation correction data 19 output from the shift register 15 are latched to a latch 17, and are input into the variation ink jetting amount variation correction means 14-1, 14-2, ..., 14-N while synchronizing with the latch signal 21, respectively from an output terminal 18-1, 18-2, ..., 18-N.

The ink jetting amount variation correction means 14-1 - 14-N has a function to change the correction data of C bit into a drive voltage value, and makes the desired amount of ink ejected from each nozzle by applying the drive voltage waveforms which are adjusted based on the variation correction data 19 to each

ink correction means 1-1 - 1-N. Thus, the concentration unevenness of image and banding which cause a image quality deterioration can be controlled by correcting the drive voltage for every nozzle according to the variation in ink jetting amount.

APPENDIX 2 (JP-A-11-277744)

In a ink jet recording head, a pressure generating chamber communicated to a reservoir and a nozzle orifice is expanded and contracted with a piezoelectric transducer. One-printing cycle T is divided into a plurality of timing periods. The ink jet recording head includes a mode for forming a small dot or medium dot by applying either of a small dot forming driving signal b for forming a small dot and a medium dot forming driving signal c for forming a medium dot in the one printing cycle T and a mode for forming a large dot by applying the small dot forming driving signal b and medium dot forming driving signal c in the one printing cycle T.